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OPPORTUNITIES TO PROTECT INSTREAM FLOWS AND WETLAND USES OF WATER IN SOUTH CAROLINA

Fish and Wildlife Service

U.S. Department of the Interior

PUBLICATIONS IN THE "OPPORTUNITIES" SERIES

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Instream Strategies for:		
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Nevada	FWS/OBS-78/40	Available
New Mexico	FWS/OBS-78/41	Available
North Dakota	FWS/OBS-78/42	Available
South Dakota	FWS/OBS-78/44	Available
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North Carolina		In preparation
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August 1988

OPPORTUNITIES TO PROTECT INSTREAM FLOWS AND WETLAND USES OF WATER IN SOUTH CAROLINA

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DISCLAIMER

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PREFACE

The National Ecology Research Center and its predecessor, the Western Energy and Land Use Team, have published a number of documents similar to this one in the past. Information is now available for 31 western, midwestern, and southern States (list inside front cover).

The primary purpose of this series of documents is to point out the opportunities in instream flow management that currently exist under State law, so that planners and managers can anticipate development, plan appropriate programs, and evaluate the costs and benefits of certain courses of action. In addition, the reports are brief histories of the level of success of various State programs. The use of this information can result in a significant cost saving for planners and managers.

In some reports, opportunities in each State are presented in a single document, but in several publications, reports on two or more States from the same geographical region are combined. The complete list of reports in this series is displayed inside the front cover. The combinations of State reports facilitates comparison of specific programs. This is particularly useful because of the wide variety of instream flow protection programs or possibilities.

Each document has an Introduction that discusses its purpose, uses, and limitations, and a separate information table that summarizes the contents for each State. The research represented in these reports provides an overview and preliminary evaluation that will help Federal, State, or local planners and managers meet their increasingly complex responsibilities.

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INTRODUCTION

OBJECTIVES

This document combines the efforts of several individuals, agencies, and organizations toward a common objective: the identification, description, and preliminary evaluation of promising opportunities for protecting instream uses of water under existing laws in South Carolina.

This report is intended for the use of State and Federal planning and management personnel who need an overview of potential opportunities for preserving instream flows. It is not intended to replace or challenge the advice of agency counsel, nor is it written to provide legal advice. Instead, it is designed as a guide for the person trying to find his or her way among sometimes bewildering State statutes and administrative practices. This report is not, and should not be taken as, official policy or prediction of future actions by any agency. It is simply a summary of some potential opportunities for protecting instream uses.

Toward these objectives, the U.S. Fish and Wildlife Service, through its Water Resources Analysis Project, contracted in 1977 with Richard Dewsnup and Dallin Jensen to identify available strategies under State and Federal laws, interstate compacts, and water quality laws. A second firm, Enviro Control, Inc., was contracted to evaluate the most promising strategies. The resulting documents reported Instream Flow Strategies for 11 States. These reports have been revised, updated, and combined in a number of new monographs. In addition, the Service has, over the years, added more States to this series. Discussion of instream flow programs and opportunities for each State is written so that each report can be read independently, with minimal cross referencing from one State report to another. The opportunities for South Carolina are summarized in Table 1.

BACKGROUND CONSIDERATIONS

Both State and Federal agencies have important roles to play in water management, particularly in instream flow preservation. This report is written from the perspective that the States have primary authority over water management, unless they are limited or superceded by an act of Congress or duly authorized Federal program or project.

The summaries offered here are not intended to suggest that Federal instream flow decisions will or should replace current State water administration or management systems. It is important for Federal employees to recognize the importance of State water management policy and statutes. A close working relationship between State and Federal agencies is often the most practical way of getting things accomplished. Resources are always limited and, in some cases, gathering and developing information may be beyond the financial power

Table 1. Summary of opportunities to protect instream flows and wetland uses of water in South Carolina.

Title	General description	Applicable situation
Water resource planning and coordination (see page 11)	Instream flows are regarded as an essential use of water during period of drought (S.C.C.A § 49-23-70). Identification and allocation of instream uses of water can be used to formulate quantities that will meet all water resource needs (S.C.C.A § 49-3-23 et seq., § 49-4-10 et seq., § 49-23-10 et seq.).	Based on local plans, the Water Resources Commission and other agencies can require minimum flows to be sufficient to meet fish and wildlife, navigational, recreational, municipal, hydroelectric, and conservation needs during periods of drought.
Riparian rights (see page 15)	Riparian owners may demand water be delivered downstream in quantities sufficient to support their reasonable use of water [White v. Whitney Manufacturing Co., 38 S.E. 456 [1902].	Reductions in flow that affect the water quantity or quality of waters to the riparian owners detriment can be abated or enjoined.
The State navigational servitude (see page 18)	Use of the navigational servitude and public trust doctrine will protect the public interest in navigation of South Carolina waters [Rice Hope Plantation v. South Carolina Public Service Authority 49 S.E.2d 132 (1950)].	The Water Resources Commission or Attorney General may use this doctrine on occasions where navigation is impaired. State actions aiding navigation do not require compensation for property taken in the public interest.

(Continued)

Table 1. (Continued)

Title	General description	Applicable situation
Groundwater permitting (see page 20)	The Water Resources Commission has the authority to regulate groundwater withdrawals in excess of 100,000 gal/day (S.C.C.A. § 49-5-20).	Regulation of groundwater reserves helps preserve surface water quantity and quality.
Hydropower development (see page 22)	Comprehensive planning and pollution certification of hydroelectric projects may include a condition of minimum flow maintenance (S.C.C.A. § 49-1-15; 16 U.S.C. § 803; 33 U.S.C. § 1341(a)(1)).	The DHEC can modify, revoke, or suspend hydroelectric licenses if flows are insufficient to meet water quality standards. FERC must consider the recommendations of State planners when developing water resources.
Dams designed for purposes other than hydropower (see page 24)	The Land Resources Conservation Commission approves dam construction and design by issuing a permit (S.C.C.A. § 49-11-140). Dam operators must obtain the consent of landowners if the waters overflow another's land (S.C.C.A. § 49-11-10).	Landowners whose property is constructively appropriated by water backing up behind dams can bring a court action for wrongful obstruction of a waterway. Applicants for construction permits could find low-flow discharge requirements on impoundments that would enhance instream and wetland values.
Water quality classification system (see page 25)	South Carolina waters are classified such that pollutants cannot degrade them below specific levels. Dilution of effluent is dependent on maintenance of streamflow (S.C.C.A § 48-1-10 et seq.; 23 DHEC Reg. 61-68(c)).	Compliance with water quality standards requires that discharges be properly diluted. Streamflows necessary to achieve this dilution are protected. Use of the antidegradation clause by the DHEC would maintain flows in streams subject to development.

(Continued)

Table 1. (Continued)

Title	General description	Applicable situation
Wetland dredging, filling, or stream alterations (see page 29)	A State permit is required to utilize, dredge, fill, drain, remove, or erect structures within the coastal zone and in navigable waters (S.C.C.A. § 48-39-130, Water Quality Act § 303(a), 101 Stat. 33 (1987) to be codified at 33 U.S.C. § 1311(h)(2)).	The DHEC, SCCC, and WRC can use their permitting authority over navigable waters to require minimum streamflows, prevent obstructions to streamflows, or mitigate other adverse effects to water resources resulting from the draining or filling of wetland areas.
Interbasin transfers (see page 32)	A permit is required to divert water from one watershed for use and discharge in another watershed (S.C.C.A. § 49-21-20).	If instream uses of water are adversely affected by interbasin diversions, the Water Resources Commission can withhold the necessary permit. If authorized, the WRC may condition the amount or timing of the diversion.
Coastal zone management act (see page 34)	Activity and development within environmentally sensitive coastal areas are subject to conformity with zoning, planning, and a permitting process (S.C.C.A. § 48-39-10 et seq.; § 48-39-130).	Freshwater flow to estuaries, wetlands, and coastal areas can be maintained by Coastal Council use of dredge and fill permitting in all areas below the high-water mark, lakes of 10 acres or more, and in streams with flows >5 cfs.
Scenic rivers (see page 36)	Inclusion of stream segments into the scenic rivers program would enhance recreational and scenic values and establish riparian rights relative to the acquisition lands (S.C.C.A. § 51-5-10 et seq.).	Development and diversion pressures can be limited by designating stream segments within the scenic river system.

(Continued)

Table 1. (Concluded)

Title	General description	Applicable situation
Land acquisition (see page 37)	Acquisition of lands and their attendant water rights may occur pursuant to various statutory provisions (S.C.C.A. § 27-9-10; 51-5-60; 51-17-10; 48-9-10; 48-11-20; 50-15-50; 51-11-20).	A public interest in lands bordering a stream can be acquired by various State agencies through purchase, devise, dedication, donation, leasing, agreement, or in limited circumstances condemnation.
Fish and wildlife protection (see page 39)	Fish and wildlife can be managed through protection of their habitats. Several endangered species inhabiting wetland, coastal, or riverine habitats have been placed on the State list (S.C.C.A. § 50-15-10 et seq.).	Activities that affect the aquatic habitats of endangered or threatened species require consultation with the WMRD to mitigate adverse impacts on these species.
Erosion and drainage control (see page 41)	Soil and water conservation programs control drainage and flooding, maintain navigation, preserve wildlife, and promote recreation (S.C.C.A. § 48-9-20).	Preventing soil erosion through the formation of conservation, water, and drainage districts will result in increased water retention and streamflows.
Interstate compacts and cooperation (see page 43)	The Water Resources Commission has the authority to negotiate with other States if activities outside South Carolina impact its water resources (S.C.C.A. § 49-21-80).	Interstate compact commissions could be formed to coordinate long-term groundwater withdrawals and regulate interstate water pollution.

of the agency most concerned. As a result, agencies and individuals should learn to cooperate with similarly oriented private, State, and Federal organizations to ensure success.

The reader who wishes to undertand opportunities for protection of an instream flow and wetlands should begin by looking at the physical and legal circumstances of the entire stream or waterbody. A planner or manager should consider all types of land and water interests involved. The stream should be examined both upstream and downstream of the reach of interest. Downstream interests should be considered because often they have statutory or contractual power to hold water instream. This survey should include ownership, possession, and control of lands and waters, and their present uses, such as agriculture, planned development, wilderness, or industry.

It is important to remember that contracts or leases may be held by several organizations and individuals. In addition, government agencies may have authority over the land and water. Potential governing agencies are many and diverse, ranging from the Federal government to special districts and municipal bodies. Therefore, a knowledge of the various instream flow and wetlands opportunities is important.

Instream flow problems may include appropriation conflicts, lack of flow, or administrative difficulties. When possible, the planner or manager should seek the least expensive, least disruptive, and simplest solution to the problem. In some cases, this may mean having a conversation with a landowner or local administrator, sending a letter to the owner or lessee of the land and water, or simply arranging a meeting between water users who could stagger their withdrawals or, in some other way, provide for an instream flow. However, these are informal methods and offer no legal protection, so their usefulness is limited to those situations in which voluntary arrangements are acceptable.

Offering information on streamflow needs to other agencies of State or Federal governments is complex and is often provided for by specific statutes. A risky, complex, and often expensive approach to protecting streams is the use of lawsuits. In some cases, litigation may be an unavoidable part of protecting a right.

In using this report, the reader should be aware of its purpose and limitations. First, only a few of many possible opportunities are described. The user should exercise initiative, judgment, and creativity in dealing with any specific situation. Second, this report should be used only as a starting point. In any situation related to the acquisition of water rights, legal advice should be sought. This report should in no way be construed as a substitute for the opinion of a private attorney, attorney general, or agency counsel. Third, this report is neither a policy nor a decision document; it is simply a collection of opportunities that appear to have utility in a variety of situations.

The purpose of this report is to encourage cooperative and innovative thinking by all persons interested in instream flows for fish, wildlife, and watershed management at Federal, State, or local levels of government, as well as private individuals and wildlife organizations. Many talented people want to protect instream flows; their cooperation in a variety of approaches will be necessary to further this goal.

OPPORTUNITIES TO PROTECT INSTREAM FLOWS AND WETLAND USES OF WATER IN SOUTH CAROLINA

INTRODUCTION

From the Blue Ridge mountains to the Piedmont, from the sandhills to the coast, South Carolina is rich in water resources. It has whitewater, blackwater, saltwater, and freshwater. It has marshes, swamps, bogs, estuaries, tidelands, wetlands, reservoirs, and lakes, as well as aquifers. South Carolina has over 11,000 miles of rivers and streams with average streamflows of about 33 billion gallons per day.

The State has plentiful water--the problem lies with getting the required quantity and quality of water at the right time and the right place. Water consumption increased over 200% from 1960 to 1980. South Carolina is second only to Florida as the fastest growing water-use State in the Nation.

Historically, surface waters were developed to irrigate extensive rice plantations, to power grist and textile mills, and to transport goods and people. More recently, water resource development is for hydroelectric and thermoelectric power projects, public drinking supplies, industry, and irrigation. The ultimate public interest in any system of water law is to discourage waste and foster the best possible use of the resource. Beyond the interest in providing security to beneficial private uses, a public interest exists in the protection of the resource in general, including the maintenance of more streamflow for protection of water quality, fishery resources, navigation, recreation, and aesthetics.

There are about as many references to water in the Code of Laws of South Carolina (1976) (also called the South Carolina Code Annotated; hereafter abbreviated as "S.C.C.A.") as there are miles of streams in the State. But, although water usage and the circumstances on which the legal framework was built are different today from 150 years ago, basic water law has changed little. Recent laws have addressed the State's changing water resource and allocation requirements. For example, laws have been enacted to govern inter-basin transfers of water and groundwater withdrawals.

South Carolina has other statutes and legal bases that examine water uses and recognize streamflow maintenance needs. The State's constitutional, statutory, and regulatory foundations are adequate to support instream flow programs. Opportunities to protect instream uses will be examined within this existing legal framework.

STATE AGENCIES WITH JURISDICTION AND AUTHORITY OVER WATER RESOURCES

Overview

Management of South Carolina's water does not fall under the auspices of just one agency. The Department of Health and Environmental Control administers all water quality permits (NPDES) throughout the State. However, the Coastal Council has consistency certification authority for NPDES permits in the coastal counties, and may deny NPDES permits. The Water Resources Commission administers the State Budget and Control Board permitting program for construction below ordinary high water in navigable waters throughout the State except in the critical area along the coast. The Coastal Council has direct permitting authority for all construction activities in the critical area of the coast (located approximately east of Highway 17). The Coastal Council must certify all Budget and Control Board Permits within the coastal counties. The Water Resources Commission also permits interbasin transfers of water throughout the State, and groundwater withdrawals in designated capacity use areas along the coast. Other agencies also play important roles in managing water resources, as described below.

Because each agency approaches water concerns from a different perspective, jurisdictions sometimes overlap, several permits can be required for development, and efforts occasionally seem duplicative. The system does, however, effectively manage water. Because there is no umbrella agency, each is free to express its concerns. A good system of checks and balances exists between agencies. For instance, if a proposed release from a dam would be sufficient to protect water quality but not navigation, the responsible agency is authorized to request a quantity sufficient to meet navigational needs.

The South Carolina Water Resources Commission (WRC)

South Carolina's Water Resources Commission (WRC) has 18 members, appointed by the Governor. Three members represent industry, three agriculture, three are from the municipal sector, and one represents saltwater interests. The remaining eight are ex officio members of the Department of Agriculture, Department of Health and Environmental Control, State Forestry Commission, Land Resources Conservation Commission, State Development Board, State Highway Department, Wildlife and Marine Resources Department, and Clemson University Water Resources Research Institute (S.C.C.A. § 49-3-20).

The WRC has broad regulatory and advisory powers over the State's water resources and issues of water quantity (S.C.C.A. § 49-3-10 et seq.). Specific regulatory functions include permitting authority over groundwater withdrawals, interbasin transfers, construction activities in navigable waters, inclusion of stream segments within the scenic rivers program, and negotiations with neighboring States over shared water resources. Nonregulatory powers include coordination of policies among State agencies, resolving special problems of water resource use, development of policies that reflect the long-range interests of all groups--urban, rural, municipal, and private--and other planning as the Governor and General Assembly may designate. The WRC also authorizes studies, holds public hearings, and appoints advisory boards (e.g., Instream Flow Advisory Committee, now called the Water Resources Advisory

Committee). The Commission prepares annual reports, conducts long-range planning, reviews State action for consistency with water policy, and represents South Carolina in interstate water agreements (S.C.C.A. § 49-3-30).

In implementing the State Water Resources Planning and Coordination Act of 1967 (S.C.C.A. § 49-3-10 et seq.), the WRC must consider supplies of surface water and groundwater, water quality, flood control, land stabilization, navigation, hydropower, drainage, salinity control, and watershed protection (S.C.C.A. § 49-3-50). Consideration of outdoor recreation and fish and wildlife opportunities may also afford some protection of instream flows (S.C.C.A. § 49-3-50(i)).

The South Carolina Department of Health and Environmental Control (DHEC)

The purity and quality of South Carolina's waters have been committed solely to the jurisdiction of the Department of Health and Environmental Control. Broad powers have been granted to DHEC in order to carry out the fundamental purposes of the Pollution Control Act, including holding public hearings, assessing penalties, granting or denying discharge permits, instituting court proceedings to require compliance with water quality standards, and implementing the Federal Water Pollution Control Act in South Carolina (S.C.C.A. § 48-1-90).

The South Carolina Wildlife and Marine Resources Department (WMRD)

The Wildlife and Marine Resources Department is divided into two divisions having various advisory authority: the Marine Resources Division and the Wildlife and Freshwater Fisheries Division (which includes Nongame and Endangered Species, and Heritage Trust Sections). The WMRD has the technical expertise to perform extensive scientific surveys of fish and wildlife resources. It inventories significant and unusual or unique natural communities and administers the scenic rivers program.

The South Carolina Department of Parks, Recreation, and Tourism (PRT)

The primary responsibilities of the Department of Parks, Recreation, and Tourism include the acquisition of parks and natural areas. Although it has no authority to regulate hunting or fishing, it can acquire lands for possible riparian use and fish habitat (S.C.C.A. § 51-1-60).

South Carolina Regional and Municipal Authorities

Conservation districts, watershed districts, and drainage districts are formed at the local level to coordinate efforts to maintain water quality, control soil erosion, and address water supply matters. Municipalities serve to protect water resource values through traditional land use planning, the exercise of zoning powers, and statutory permit authority. Other authorities include the regional Coastal Council (S.C.C.A. § 48-39-40) and the Land Resources Conservation Commission (S.C.C.A. § 48-9-40).

The South Carolina Land Resources Conservation Commission (LRCC)

The Land Resources Conservation Commission administers the public lands of the State, assists water conservation districts, coordinates local and regional land use planning, and manages flood plain development, exclusive of tidelands (S.C.C.A. § 48-9-210, 290). Previously called the State Soil and Water Conservation Commission, the LRCC promotes erosion and sediment reduction and stormwater management programs (S.C.C.A. § 48-18-40). It also provides safety certification in the construction and maintenance of small, non-hydroelectric dams (S.C.C.A. § 49-11-30).

The South Carolina Coastal Council (SCCC)

Each of eight coastal counties in South Carolina is represented on the South Carolina Coastal Council to regulate development within the coastal area (S.C.C.A. § 48-39-10 et seq.). The SCCC was formed to operate land use controls and permit systems and otherwise regulate "critical areas" of the coastal zone. Critical areas include coastal waters, tidelands, beaches, and oceanfront sand dunes (S.C.C.A. § 48-39-10 (j)). Through the development and administration of a coastal management program, the SCCC provides environmental safeguards with respect to construction in critical areas, while fostering economic and social improvements of coastal resources (S.C.C.A. § 49-39-30). In implementing this policy, the SCCC exercises broad regulatory authority to require permits of those persons utilizing critical areas for uses other than the use the critical area was devoted to as of July 1977. This includes examining, modifying, approving, or denying permits of those who would affect marine estuarine, sanctuary, beachfront, or coastal waters (S.C.C.A. § 48-39-50).

The South Carolina Budget and Control Board

Any construction, dredging, filling, or alteration of navigable waters requires a permit from the Budget and Control Board. The board receives recommendations from the WRC, DHEC, WMRD, PRT, LRCC, and SCCC based on their respective concerns. It then approves or denies actions that may have adverse environmental consequences.

WATER RESOURCES PLANNING AND COORDINATION

Opportunity

Three legislative pronouncements, enacted separately and for different reasons, recognize instream flow values. The Water Use Reporting and Coordination Act, the Drought Response Act, and Joint Resolution No. 198 could be used to further an instream flow program.

Background

Water allocation systems historically have focused on the economic and property aspects of water use. Instream uses perceived as lacking a clearly quantifiable economic value (such as whitewater boating) have not fit comfortably into this perspective. As consumptive water uses increasingly compete with the public demand for recreation and for protection of water quality and aquatic habitat, instream flow protection has gained greater recognition.

In response to large agricultural withdrawals and in coordinating collection of groundwater and surface water use data, the General Assembly of South Carolina enacted the Water Use Reporting and Coordination Act in 1982 (S.C.C.A. § 49-4-10 et seq.). Every user of 100,000 gallons of water or more per day files quarterly reports containing information related to the quantity, source, and use of water. During periods of extremely low stream flows, the WRC may require monthly reports of water use in lieu of quarterly reports. Instream flow values are important under this act in that low flows may accelerate reporting requirements. The availability of accurate water use data could allow quantities in certain river segments to be standardized and incorporated into a Statewide program to protect existing instream flow uses.

In 1983, the General Assembly, by Joint Resolution No. 198 (R115, H2549), directed the WRC to identify and prioritize streams in need of low flow protection and to recommend minimum flow requirements to protect instream uses. The Commission initiated the Instream Flow Study to develop necessary information to address this directive. Phase I of the study involved the identification and ranking of streams for which minimum flows need to be established, and Phase II involved the determination of minimum flow requirements to protect instream uses for the priority stream segments identified in Phase I. The Water Resources Advisory Committee (formerly known as the Instream Flow Advisory Committee), representing a broad spectrum of public and private water-related interests, was established to provide advice during the study process.

Phase I was completed in 1985, and a report was provided to the General Assembly at that time. During that phase, over 500 stream segments were evaluated and ranked based on their potential for instream use impacts due to low flows. Natural and human-induced factors that affect flows and the relative importance of each segment were considered. Fifteen priority stream segments were identified as having the greatest need for streamflow protection. Each stream segment was given two numerical values:

(1) a protection need value -- based on natural stream flow and human activities within the stream segment, and

(2) a significance value -- the relative importance of each segment based on both the instream and offstream uses of the stream segment.

The overall value was determined by multiplying the protection need value with the significance value. The higher the overall value number, the greater the need for protection of that stream segment. Priority ranking was given to 15 stream segments for which minimum flow levels need to be established:

1.	Whippy Swamp	625.0
2.	Waccamaw River 1	336.0
3.	Black Mingo Creek	230.0
4.	Saluda River 1	207.0
5.	Coosawhatchie River 1	88.0
6.	Wateree River 1	33.7
7.	Saluda River 4	27.0
8.	Jeffries Creek	25.9
9.	Wateree River 2	20.7
10.	Catawba River 2	15.5
11.	Combahee River	13.2
12.	Sparrow Swamp	11.6
13.	Saluda River 2	10.5
14.	Broad River 2	9.5
15.	South Saluda River	7.6

During Phase II, site specific data were collected at 31 study sites on 9 of the 15 priority stream segments. Six segments (Saluda 1, Saluda 2, Saluda 4, Catawba 2, Wateree 1, and Wateree 2) were located in the Piedmont physiographic region and had flow regulated to some extent by hydroelectric projects. Three segments (Coosawhatchie, Jeffries Creek, and Whippy Swamp) were located in the Coastal Plain and experienced little or no regulation of flow.

Numerous existing instream flow assessment methods were reviewed prior to developing the study methodology. In cooperation with the WMRD, DHEC, PRT, SCCC, Department of Agriculture, State Development Board, and affected local governments, the WRC determined the criteria to be used to identify streams with significant instream flow needs. The needs to protect fish and wildlife resources, recreation, water quality, hydropower generation, aesthetics, navigation, ecosystem maintenance, agriculture, and the continued economic well-being of other industries were recognized as inexorably linked to preservation of instream flows. Recommended minimum flow requirements for each stream segment were determined by selecting the highest minimum flow value of all use categories of all study sites within a segment. This procedure ensured the protection of all instream uses at an acceptable minimum level throughout the segment.

Recommended minimum flow requirements were determined for each priority stream segment for three time periods: January-April; July-November; and May, June, and December. Threatened and endangered species were identified on Catawba 2, Wateree 2, and Saluda 1; however, flow requirements to adequately protect these species were not determined because of the need for extensive additional studies.

In general, the minimum flows needed to protect fishery resources were sufficient also to protect all other instream uses, therefore the minimum flow requirement for fisheries was also that for the segment. However, minimum flow requirements for navigation and unique ecological characteristics determined the overall minimum flow requirements for five stream segments during certain time periods. Based on historic monthly flow data for the study segments, sufficient flow has been available in most of the Piedmont segments to meet recommended minimum flow requirements, even during the driest months on record. Streamflows in the Coastal Plain stream segments, however, occasionally fall below the recommended minimum flow requirements and impair instream uses.

The minimum flow requirements recommended in this report did not represent optimum flow conditions for the respective instream uses, but rather, protected instream uses at an acceptable minimum level below which some uses would be impaired or eliminated. Because the scope of this study was to determine flow standards to protect only instream uses, potential impacts of the recommended standards on offstream uses were not considered.

Comprehensive water management program or water use laws would generally be unnecessary in South Carolina, where rainfall is abundant and catastrophic drought rare. However, when drought situations do appear, the riparian system of adjudicating water rights is inadequate and inefficient. Enforcement of rights proceeds on a case-by-case basis, with no basinwide allocation perspective.

Recognizing this, the legislature enacted the South Carolina Drought Response Act of 1985. The purpose of the act, which is administered by the WRC, is to establish drought management areas (S.C.C.A. § 49-23-10, -30, -50). Within each drought management area, a local committee, representing county, municipal, water supply, utility, and agricultural interests, may request the WRC to declare a ban on nonessential water uses. The WRC promulgates regulations specifying nonessential water uses that can be discounted during these periods. Water used strictly for firefighting, health and medical purposes, and maintaining instream flows is considered essential water use (S.C.C.A. § 49-23-70(c)).

Some regions of the State that experienced moderate drought conditions exercised voluntary conservation measures which reduced water consumption by 15%. The act is currently being used to encourage planning and an exchange of information between water users. However, should the situation become extreme, the WRC could issue a drought alert and proportionately limit water withdrawals to maintain essential instream uses. The Commission is authorized to exact penalties of up to $1,000 from violators of the act.

Evaluation

Recognition of instream flow values is in its infancy in South Carolina. The first step of collecting water use data has been authorized by the Water Use Reporting Act. Each agency must submit data to the WRC, which then represents its interest in maintaining instream flows, be it for navigation, recreation, fish and wildlife, or hydropower. Few agencies have demanded ascertainable quantities of water be left in the stream to implement their programs. Problems related to the accuracy of information collected need to be resolved in order to manage the water resource more effectively.

Joint Resolution No. 198 cannot be used as regulatory authority for maintaining instream flows. Additional studies are needed to quantify economic and operational impacts of the recommended minimum flow requirements on offstream uses and peaking hydroelectric power projects. Existing recommendations have not yet been incorporated into a program for instream flow protection.

RIPARIAN RIGHTS

Opportunity

Instream flow values may be protected by holders of common law riparian water rights. Any entity (government, business, or individual) may demand water be delivered downstream in quantities sufficient to support its reasonable use of such waters, with the result that instream flow values will be protected.

Background

In addressing instream flow matters of South Carolina, attention should first be directed to the riparian basis of State water law. The South Carolina Supreme Court adopted the doctrine of riparian rights in Omelvany v. Jaggers [2 Hill 634 (S.C. 1835)], in which it expressly rejected the contention "that the person erecting the first mill thereby acquired any superior rights" (i.e., rejecting the doctrine of prior appropriation) [id. at 640].

Until 1901, South Carolina followed the "natural flow" theory of riparian water law. Those whose lands actually touched on the watercourse were entitled to the continuance of the flow of the stream by or through their property, undiminished in both quantity or quality. The natural flow theory was tempered by the adoption of the "reasonable use" doctrine in the case of White v. Whitney Manufacturing Co. [60 S.C. 254, 38 S.E. 456 (1901)]. Arising from a dispute between two millowners who both needed the streamflow to propel their machinery, the case held that each proprietor was entitled to use the stream without diminution or alteration. However, each was required to use the water reasonably, so as to cause no material injury to the other's correlative right to use the water. The natural flow theory, said the court, could not be the law, for it would manifestly give the lower proprietor superior advantages over the upper and, in many cases, give him a monopoly of the stream. Reasonable use was to be done in a manner that did not destroy, render useless, materially diminish, or affect a lower riparian's application of water. Although subsequent cases continued to couch riparianism in natural-flow language, South Carolina now follows the more flexible "reasonable use rule." [The reasonable use rule can be used to protect instream flows in instances where diminution of flow would result in injury to lower riparian owners. Mason v. Apalache Mills [81 S.C. 554, 62 S.E. 399 (1907)].

The principal tenets of riparianism protect instream flows. Inherent rights to the use of the water include the right to the flow of the stream in its natural course and in its natural condition with respect to both volume and purity, except as affected by reasonable use by other proprietors, and the right of access to the stream. Riparian rights cannot be lost through nonuse and are not limited to existing uses; the flow must be available if needed in the future. Riparian rights include boating, bathing, swimming, and fishing, each of which may be impaired by diminished flows. When there is not enough water to go around--during periods of drought, for instance--each use is reduced proportionately until it is reasonable with respect to other uses. The riparian doctrine is a private property doctrine and is enforceable only by those having rights derived from riparian ownership.

To assert riparian rights, it must first be determined whether the water in question is part of a natural watercourse or merely surface flows. This distinction is important because obstruction of surface flow is not actionable in itself, whereas the obstruction of the flow of a natural watercourse is actionable, provided that actual injury occurred as a result of the obstruction. See Johnson v. Williams [228 S.C. 623, 121 S.E.2d 223 (1961)]. Injury to an instream use of water would be the basis for the exercise of a riparian right.

Riparianism is not only concerned with the security of private uses. Where the State is a riparian landowner, it has the same rights as any other owner similarly situated. It would be entitled to assert its riparian status to protect streamflows for public purposes such as conservation, recreation, or aquatic habitat protection.

Rights to the use of water may be defined by prescription as well as reasonable use. A prescriptive right to use water in nonnavigable streams is acquired by adverse possession. Accomplished by the open, notorious, and continuous use of water in a manner adverse to the rights of others for a period of 20 years, this right is not constrained by considerations of reasonableness. Unlike riparian rights, water obtained by prescriptions also can be used on adjacent lands. Jordan v. Lang [22 S.C. 159, 37 S.E. 69 (1885)] involved the use of water for irrigating rice. The downstream riparian claimed that Lang's use of the entire flow of the watercourse was detrimental to him. Because Lang established a prescriptive right, not through reasonable use, but by adverse use of the water for 20 years against successive landowners, he was entitled to use all waters.

An easement of drainage through another's land may also be acquired by prescription. Where this prescriptive right is acquired through continuous usage, a lower landowner cannot obstruct the flow. However, the upper owner cannot enlarge or vary the servitude beyond the conditions exercised during the prescriptive period [Clemson University v. First Provident Corp., 260 S.C. 640, 197 S.E.2d 914, appeal after remand 263 S.C. 199, 209 S.E.2d 49 (S.C. 1974)]. Nonriparians who seek to make use of waters of a lake created by the dam of another must base their claim on a right acquired by prescription or grant [Morris v. Townsend, 197 S.E.2d 819 (S.C. 1974)]. Property held for a public purpose (navigation or instream flow) cannot be acquired by adverse possession. Therefore, State agencies must first assert the public right before they can challenge diversions that may ripen into prescriptive rights.

Examples

Reasonable use, as determined in White, provides the basis for decision in water quantity cases. In McMahan v. Walhalla Light and Power Company [95 S.C. 268, 78 S.E 980 (1913)], an action was brought for damages allegedly caused by construction of a dam across a creek above the plaintiff's mill. In applying the reasonable use rule to the matter of water quantity, the court found that State law required the rights of both upper and lower riparians to be considered when utilizing water supply. Neither had the right to monopolize the stream. However, the downstream millowner aided instream flows by asserting his riparian right to the uninterrupted flow of water. Also, in Mason v. Apalache Mills [81 S.C. 554, 62 S.E. 399 (1907)], reasonableness prevented detention of water in a dam by an upper landowner who released large volumes of water to the lower riparian's detriment. The court determined that such use of the river constituted a continuing trespass, and, although the dam was of great value, it could not be used to impair another's right [id. at 563].

The reasonable use theory of riparianism also applies to issues of water quality. The riparian right to use water is unreasonable if it is inconsistent with other riparian owners. When a landowner adapted his riparian proprietorship to a reasonable recreational purpose, a millowner's efflux was considered unreasonable. Though the millowner argued that his dumping of untreated wastes into the Seneca River was an inherent riparian property right, the court found that the waste disposal use was merely a privilege conferred by the State. Furthermore, the State had the right to require disposal permits and change stream conditions to adapt to changing water conditions [U.S. v. 531.13 Acres of Land, 366 F.2d 915, 919 (4th Cir. 1966)].

The tendency of the South Carolina court and bar is to avoid reasonable use determinations and rely instead on the more customary nuisance doctrines. Nuisance actions can be either private or public. A private nuisance is a nontrespassory invasion of another's interest in the private use and enjoyment of property (Restatement 2d of Torts § 821D). A private citizen can prosecute those who block drainage of his property [State v. Tucker, 54 S.C. 251, 32 S.E. 361 (1899)]. A public nuisance is an unreasonable interference with a right common to the general public, such as those activities that adversely affect the public health, safety, comfort, or convenience (Restatement of Torts § 821B).

Certain counties impose a duty on landowners to clean out their streams twice a year to keep them clear of all obstruction to a free and uninterrupted flow of sand and water. Also, anyone who interferes with the State navigational servitude by obstructing streamflow may be liable for creating a public nuisance (S.C.C.A. § 49-1-30).

Evaluation

The reasonable use theory of the riparian doctrine affords some protection of instream flows, since many consumptive water uses subject the user to potential liability for an unreasonable use. To the extent their own reasonable use of water is impaired, riparian owners can prevent impoundment or diversion of water that diminishes instream flows. Avenues for enforcement of this right include agreement by negotiation, arbitration, or lawsuit.

The relatively small number and vintage of reasonable use cases in South Carolina prohibit a reliable assessment of what may or may not be reasonable today. There is no certainty that present instream flows considered reasonable under existing conditions would still be considered reasonable if others initiate new consumptive uses of the water. Thus, the very flexibility of "reasonable use" riparianism means that future developments or growth could actually erode or reduce present instream flows.

THE STATE NAVIGATIONAL SERVITUDE

Opportunity

A common right or servitude in the public to freely use the navigable waters of South Carolina is declared and protected both in its Constitution and by legislative enactment. Instream uses of water and minimum streamflows can be required to prevent obstructions of navigable waterways.

Background

As early as 1714, legislation was passed by the colonial government for the improvement of inland navigation. Canals were constructed that could provide navigation directly from coastal ports to inland towns. At the height of development, more than 2,000 miles of South Carolina's inland waters were navigable.

The public right of navigation, as well as fishing rights in navigable waters, is superior to any rights to streambeds that may be possessed by riparian landowners [Rice Hope Plantation v. S.C. Public Service Authority, 126 S.C. 500, 524, 59 S.E. 2d 132 (1950)]. The public right to freely use navigable waters is declared and protected in the South Carolina Constitution and by legislative enactment. "All navigable waters shall forever remain public highways free to the citizens of the State and the United States" (S.C. Constit. art. XIV, § 4). This clause gives the State power to advance the public purposes of navigation, flood control, reforestation of watersheds and betterment of its citizenry's health [Clarke v. South Carolina Public Service Authority, 177 S.C. 427, 181 W.E. 481 (1935)].

S.C.C.A. § 49-1-10 declares all watercourses, cuts, and streams capable of floating rafts of lumber or timber to be navigable. This navigational servitude embraces not only that which is actually used, but streams that are susceptible to use for navigation in their ordinary state [State v. Columbia Water Power Co., 2 S.C. 181, 187, 63 S.E. 844 (1909)]. A series of cases in the 1800's [see Cates v. Wadlington, 1 McCord 580 (S.C. 1822), Shands v. Triplet 5 Rich. Eq. 76 (S.C. 1852), State v. Hickson 5 Rich. Eq. 447 (S.C. 1852), State v. Pinckney 22 S.C. 484 (1884), and Heyward v. Farmer's Mining Co., 42 S.C. 138, 19 S.E. 963 (1894)] established the rule in South Carolina that the beds of nontidal streams, "navigable in fact," were subject to a navigational easement even if under private ownership. Being navigable in fact refers to the natural capacity (width and depth) of the stream to be useful to commerce. It is the central factor defining navigability in South Carolina. In contrast with the Federal test of navigability, which requires that interstate commerce be supported, the State test to be applied in determining the navigability of waters is whether a stream inherently has the capacity for valuable floatage. The streams of South Carolina need not float commercial products to be valuable [State v. Columbia Water Power Co., 82 S.C. 181, 63 S.E. 884 (1909)]. If the waterway is used by the general public for boating, hunting, and fishing, it is navigable in fact. The modern tendency in the State is to declare water navigable if it is of such character to be used by the public for pleasure boating. If it will float a 14-foot johnboat, it is navigable. The use of waterways for boating, hunting, and fishing are legitimate and beneficial public uses. Therefore, the Coastal Council lacked power to authorize the complete blockage of navigable waterways when there was no overriding public interest [St. ex rel. Medlock v. South Carolina Coastal Council, 289 S.C. 445, 346 S.E.2d 716, 719 (1986)]. Navigability requires freedom from obstruction, and both riparian landowners and the State acting in the public's behalf have a remedy in nuisance if navigable waters are blocked (S.C.C.A. § 49-1-10).

Examples

The obstruction of a navigable stream is a public nuisance in contravening Section 1, art. 14 of the South Carolina Constitution and S.C.C.A. § 49-1-10. The erection of a dam across a navigable stream for a public purpose was not enjoinable by a private party as a nuisance [McMeekin v. Central Carolina Power Co., 80 S.C. 512, 61 S.E. 1029 (1908)]. However, injunctive relief against a permanent obstruction to a navigable canal was upheld in State v. Water Power Co. [82 S.C. 181, 191-3 (1909)]. The court of equity noted that the State, as trustee for the people, could invoke the powers of the court to protect the valuable right of navigation.

The definitions of navigability and "for public purposes" were reviewed in the case of Rice Hope Plantation v. South Carolina Public Service Authority [215 S.C. 500, 49 S.E.2d 132 (1950)]. A diversion of the fresh water of the Cooper River by the Public Service Authority (PSA) resulted in saltwater infiltration into streams that ran through the plaintiff's property. The court's interpretation of the State's power to take, use, or modify navigable waters for public purposes states:

> The waters of the ocean and its bays, and of public watercourses and lakes, so far as they lie within the jurisdiction of the State, are part of the public domain, and the State may authorize the diversion of such waters for any purpose it deems advantageous to the public, without providing compensation to riparian proprietors injuriously affected. Such diversion is not a taking of private property by eminent domain, but a disposition by the public of the public property (Id. at 160).

However, in this case, intrusion of saltwaters destroyed the riparian right to hunt and fish. Improvement of navigation by the PSA was no defense, and a taking of private property for public use requiring compensation was found.

Evaluation

What constitutes a navigable waterway so as to raise a servitude in the public in South Carolina is not completely free from doubt. Although there is a presumption that title to tidelands and nonnavigable waters lies with the State, litigation is underway that will establish whether their use is exclusive or public.

The State Budget and Control Board and the Attorney General, as trustees for the public and fiduciaries of the State's waters, have asserted the navigational servitude as a method of preventing obstructions or reductions in the flow of navigable waters. The public right of navigation, as well as the right of fishing in navigable waters, override the ownership question regardless of the outcome.

The use and protection of navigable waters by riparian landowners, and the government, includes multiple opportunities to consider instream flow values. These include the ability of the landowner to enjoin or prevent unreasonable interference with his riparian right, and governmental power to abate obstruction that would impair navigability. Indeed, maintaining "navigability" may, in large part, be synonymous with maintaining instream flows.

GROUNDWATER

Opportunity

The modern science of hydrology has demonstrated the interrelationship between surface water and groundwater resources. The prudent withdrawal and allocation of groundwater supplies can be an effective tool to preserve surface flows.

Background

The WRC estimates that fully one-half of water used in the State is groundwater. A significant portion of the total groundwater used throughout the State is withdrawn from the eight coastal counties, primarily for irrigation purposes. Because saltwater intrusion was of great concern, the Groundwater Use Act of 1969 (S.C.C.A. § 49-5-10 et seq.) was enacted. The act permits groundwater to be put to beneficial use, subject to regulation to conserve, provide, and maintain conditions conducive to the development of water resources. It authorizes the WRC to declare and delineate "capacity use areas." A capacity use area will be created when the aggregate uses of the groundwater threaten to develop to a degree that requires coordination and regulation, or withdrawal threatens to exceed or impair the renewal or replenishment of the groundwater (S.C.C.A. § 59-5-40 (b)(i) and (ii)).

A permit to withdraw, divert, or drill for groundwater is required from all persons, businesses, governmental agencies, and political subdivisions using more than 100,000 gallons/day in the capacity use areas (S.C.C.A. §§ 49-5-20, 60). Water users within a capacity use area must report on the quantity of water used, its source, and the nature of the use (S.C.C.A. § 49-5-50). Two capacity use areas have been identified--the Waccamaw and the Low Country capacity use area.

In considering permit applications, the WRC is to examine how groundwater use may divert or reduce flows from watercourses or aquifers (S.C.C.A. § 49-5-60(h)). WRC Regulation 121-2.11 requires the Commission to protect against unreasonable adverse effects of groundwater withdrawl on other water users, including adverse effects on public use (quality and quantity). Should groundwater withdrawals impair the availability or fitness of water for other uses, the WRC would balance the importance and necessity of the particular withdrawal with public health, safety, or welfare considerations. To prevent or abate adverse effects on other water uses, the WRC can regulate the depth, spacing, and pumping levels of wells. It is also authorized to control the timing and quantity of water withdrawn (S.C.C.A. § 49-5-60).

A permit will automatically be issued if there is evidence of a nonconsumptive use. Nonconsumptive use is defined as water withdrawn in such a manner that it is returned to groundwater system or aquifer without diminution in quantity or impairment of quality near the point at which it was withdrawn (S.C.C.A. § 49-5-30(4)(ii)). Virtually all uses would therefore be consumptive uses. The duration of the permit is limited to 10 years, the duration of the existence of a capacity use area, or a time necessary to reasonably amortize the applicants withdrawal and water-using facilities.

Example

The Savannah River forms the boundary between Georgia and South Carolina. The coastal town of Savannah, Georgia, is highly industrialized and pumps groundwater to meet its industrial needs in excess of 100 million gallons per day. Due to these massive withdrawals, water levels in the limestone aquifer (Florida aquifer) have dropped 150 feet, and its cone of depression extends outward to Hilton Head, South Carolina, 40 to 50 miles away. Hilton Head withdraws about 10-14 million gallons per day to be used for domestic and irrigation purposes.

Not only do Savannah's withdrawals limit growth in South Carolina, but also saltwater intrusion into municipal supplies is of increasing concern. Pressure on the groundwater resource forces this resort town to look to surface waters to augment the existing supply. Instream flows are adversely affected by the lowering of the water table and diversions of surface waters.

Evaluation

No court decisions have been found governing the use or ownership of groundwater in South Carolina. In their absence, the Groundwater Use Act suggests that the reasonable use doctrine will be imposed through the WRC permitting process. The agency must consider the extent to which water use was "reasonably necessary" to meet the user's needs, as well as protecting against unreasonable effects of one user against others.

The use of permitting procedures to enforce the nonconsumptive requirements of groundwater withdrawal would augment flows in some stream segments. Issuing permits for irrigation (of golf courses, for example) may have to be curtailed or conditioned if instream flows are to be maintained. Conservation practices and groundwater quality monitoring would reduce the need to transfer potable surface supplies or deplete other groundwater reserves.

HYDROPOWER DEVELOPMENT

Federal regulation of the development of hydropower facilities in South Carolina requires the Federal Energy Regulatory Commission (FERC) to review comments received from various State agencies during the licensing process. Each agency is individually responsible for a specific area or field as it relates to the protection or development of State waters.

Section 401 of the Clean Water Act [33 U.S.C. § 1341 (1982)] requires applicants for a Federal license or permit for any activity that results in a discharge of a pollutant into U.S. waters to obtain a permit from the State in which the discharge originates. Section 401 is important in South Carolina because the DHEC must first approve discharging activities before the relevant Federal agency may issue its permit or license. Because the Section 401 water quality certification is a State program conducted pursuant to State as well as Federal authority, South Carolina may use the Section 401 process for various activities having an impact on instream flows.

In addition to a FERC license, the State issues a permit for hydropower facility construction. State agencies, such as the WMRD, have an opportunity here also to comment before the Budget and Control Board will issue a permit for an activity that significantly affects the flow of navigable waters (S.C.C.A. Reg. 19-450).

Opportunity

While hydroelectric use is nonconsumptive in the sense that the water is eventually released into the stream, flows must be adequate to dilute and disperse pollutants and prevent excessive fluctuation that could adversely affect aquatic habitats or water-dependent development. The State may influence Federal hydropower licenses through the Section 401 process and may condition its State certification of hydroelectric facility discharges on the maintenance of instream flows.

Background

State programs arising from the Federal Power Act include the following:

Planning. Part I of the Federal Power Act [16 U.S.C. § 791-823(a)(1982)] empowers the Federal Energy Regulatory Commission to issue licenses for dams, conduits, reservoirs, and other works necessary for the development, transmission, and utilization of hydroelectric power. Construction, operation, and maintenance of such facilities requires a FERC license.

South Carolina is currently preparing a comprehensive plan for improving and developing its rivers and streams. This plan will include the maintenance of instream flows on certain segments of State waters. Upon the submission of the comprehensive plan, FERC will consider the State's proposals and may condition licenses accordingly (16 U.S.C. § 803).

Section 10 of the act conditions the licensing of a project on the requirement:

> That the project adopted . . . shall be such as in the judgment of the Commission will be best adapted to a State comprehensive plan for improving or developing a waterway or waterways for the use or benefit of interstate or foreign commerce, for the improvement and utilization of water power development, and for other beneficial public uses, including recreational purposes; and, if necessary in order to secure such plan, the Commission shall have authority to require the modification of any project and of the plans and specifications of the project works before approval . . . [16 U.S.C. § 803(a)(1982)].

The Federal Power Act provides that nothing contained therein shall affect State laws relating to the control, appropriation, use, or distribution of water used in irrigation or for municipal or other uses [16 U.S.C. § 821 (1982)]. State input into the Federal licensing process is thus very important in planning.

Permitting. The State also requires a permit to construct hydroelectric facilities or divert water from navigable streams. The permit is required for any dredging, filling, construction, or alteration activity affecting navigation or water subject to the navigational servitude (S.C.C.A. Reg. 9-450.1). Significant modifications to an existing facility (the portion within the stream channel) also require State permits. Agencies review the permit application based on their statutory responsibilities and identify the advantages and disadvantages of the project. Each then assesses the relative merits of the proposed activity, whether environmentally harmless or not (S.C.C.A. Reg. 19-450.6).

The commenting agency is allowed to object to or condition approval of the permit. Objections require the agency and applicant to consider together how the objection might be reconciled. This process includes avoiding, minimizing, or rectifying the adverse impacts of the action. The WRC coordinates agency comments and objections and makes a recommendation to the Budget and Control Board. Based on technical input from the agencies, the board ultimately determines the feasibility of the proposal and may issue, condition, or deny the permit.

Issuance of the permit by the board is made if navigation is not impaired, the need for the proposed project outweighs current and historical uses of the stream, the impact of the project will not threaten or endanger plant or animal life, and projects to provide recreational or aesthetic benefits or detriments do not alter the watercourse or damage riparian lands (S.C.C.A. § 49-1-15).

Pollution control. Hydroelectric facilities necessarily alter streamflows and thus the character and quality of the watercourse. Under Section 401 of the Clean Water Act (33 U.S.C. § 1341(a)(1)): "no license or permit shall be granted if certification has been denied by the State." States may effectively veto the issuance of a Federal license by refusing to certify project compliance with State water quality standards. The State retains the right to set more stringent discharge requirements than those provided in the Federal act and to require licensees to demonstrate compliance with these standards under Section 401. Frequently, the State may insist on the inclusion of certain conditions (e.g., maintenance of minimum flows) before it grants certification. The State may waive its authority to certify or condition a project if it refuses to act within 1 year of receipt of a request for certification. As several dams are scheduled for relicensing in 1996, negotiations between the State and licensees are currently underway to place instream flow conditions on those facilities.

The State veto power under Section 401 is an effective tool to use in preserving instream flows. Although it has yet to exercise it, South Carolina has the power to modify, revoke, or suspend water quality certification should its provisions not be met. Withholding certification is only one strategy granted the State by Federal statute.

Evaluation

The State has not exercised complete veto power over the licensing of hydroelectric facilities to date. However, each agency is currently developing criteria to help determine acceptable minimum instream flows to be used when certain facilities come up for relicensing. Submission of a comprehensive plan, which includes instream flow standards, offers the State an indispensable opportunity to affect the Federal decisionmaking process.

DAMS DESIGNED FOR PURPOSES OTHER THAN HYDROPOWER

Opportunity

Dam-building for such purposes as water storage or flood prevention is regulated by statute and common law riparianism. Construction of these dams requires permits for dredging and filling, passing safety design requirements, and compliance with Federal, State, and local certificates. These review processes can be used to modify or amend plans to include instream flow-related guidelines.

Background

Several statutes limit or regulate the erection of dams and the backing up or overflowing of water (S.C.C.A. § 49-11-10, -20). Other provisions prohibit obstruction of navigable waters and require landowners to clean obstructions from streams (S.C.C.A. § 49-1-10, -20, -30, -40).

The Dams and Reservoirs Safety Act (S.C.C.A. § 49-11-10 et seq.) requires approval of dam construction and design. Dam safety certification is the responsibility of the Land Resources Conservation Commission. The LRCC may require the removal of a dam that by its existence may be unsafe or endanger life or property (S.C.C.A. § 49-11-170). It may also specify discharge rates that avoid injury to downstream owners (S.C.C.A. § 49-11-130). The LRCC approves construction and enlargement of dams (S.C.C.A. § 49-11-140), although not water withdrawals, in navigable waters and wetlands of South Carolina.

Water withdrawals are subject to the regulatory authority of the WRC. This agency recognizes that the amount of water in a stream varies from day-to-day or year-to-year, depending on the weather. Therefore, WRC requires dam operators to maintain minimum streamflows below the dam in amounts equal to what flows into the reservoir, or as established by the 7Q10 model, whichever is less.

No private dam operator is allowed to stop the course of any water so as to overflow lands of another or raise the elevation of natural flow of a river without the landowner's consent (S.C.C.A. § 49-11-10). The statute, despite its age, has rarely been construed by the South Carolina courts. In Brisbane v. O'Neall [3 Strob 348 (1847)], the court gave the statute a literal construction. A lower landowner who had obstructed the drainage from a swamp so as to flood the land of an upper landowner was required to maintain a canal to carry off the water. In Lampley v. Atlantic Coast Line R.R. Co. [71 S.C. 156, 60 S.E. 773 (1905)], the court held that § 49-11-10 applied in actions of landowners seeking to recover for the wrongful obstruction of a watercourse, essentially protecting common law property rights. The statute is still construed, however, to prevent downstream dam owners from constructively appropriating an upstream landowner's property [Cooley v. Clifton Power Co. (747 F2d 258, 260 (4th Cir. 1984))].

Evaluation

S.C.C.A. § 49-1-10 et seq. requiring landowners to clear obstructions from streams, thereby enhanching instream flows, has been unenforced in recent times. Municipalities holding riparian lands are excepted from its provisions. State regulation of dam construction activity occasionally imposes low-flow discharge conditions for impoundments in navigable waters. Although not used extensively in the past, this condition could be imposed on all future construction permits.

WATER QUALITY AND POLLUTION CONTROL

Opportunity

The relationship between water quality and water quantity provides another means to protect instream flows. The attainment of water quality standards depends on regulating the quantities of point and nonpoint pollutant sources, and maintenance of instream flow quantities is crucial for dischargers to meet their permit requirements.

Background

When Congress enacted the Federal Water Pollution Control Amendments in 1972 (P.L. 92-500; 33 U.S.C. § 1251 et seq.), its major focus was to encourage State administration of the National Pollutant Discharge Elimination System Program (NPDES). State administrative functions were further strengthened by the Water Quality Act of 1987. All NPDES permits issued must comply with water quality standards developed by the State pursuant to § 303 (CWA § 301(b)(1)(C), 33 U.S.C. § 1311(b)(1)(C). The State effluent standards and guidelines for wastewater treatment must be as stringent as those found in 40 C.F.R. 133.

The NPDES permit must include conditions that meet both technologically based effluent standards and receiving water quality standards. South Carolina uses the 7Q10 model to set standards for waters receiving pollutants. "7Q10" low-flow standards are relied on when issuing NPDES permits to establish minimum instream flows. "7Q10" low flow is the lowest flow that statistically would occur for a 7-day period once every 10 years. Used by the DHEC, 7Q10 determines the water volume at which wastewater treatment effluent can be assimilated by the receiving water. The standards are based on the physical attributes of a stream (USGS flow data) to support the designated use (e.g., agriculture, drinking water supply, fish and wildlife management). Once set, permit limitations must ensure compliance with the standard, regardless of the availability or effectiveness of treatment technologies (C.W.A. § 303(c)(2), 33 U.S.C. § 1311(B)(1)(C)).

Although instream flows are not explicitly mentioned in South Carolina's Pollution Control Act (S.C.C.A § 48-1-10 et seq.), the DHEC is seemingly empowered to establish and impose, by certification, instream flow maintenance programs. The broad definition of pollution, coupled with statutory statements of policy requiring certification for activities that alter State waters, implies that some form of approval is required for activities that materially affect stream flows. DHEC possesses some authority to impose flow restrictions in certain situations (e.g., as part of the Section 401 certification of hydroelectric projects), but a minimum streamflow requirement can be imposed only through a separate program.

The State's Pollution Control Act gives DHEC the authority to set standards prescribing substance levels and physical properties necessary to achieve water purity and quality. The formulation of water quality standards includes consideration of a stream's suitability for particular uses, with "a view to conserving it and encouraging the most appropriate use of the lands bordering it for residential, agricultural, industrial, and recreational purposes" (S.C.C.A. § 48-1-70, -80).

South Carolina has issued narrative standards describing water quality requirements in general terms and numeric limits with specific chemical, physical, and biological parameters. Compliance with these quality requirements, such as dissolved oxygen levels, depends on flow. Wastes discharged into a moving body of water are diluted and dissipated as they flow downstream. Extreme diminution or fluctuations in flow may interfere with beneficial uses and the stream's ability to support aquatic life. Biodegradable wastes, such as municipal sewage, are absorbed by the stream's assimilative processes. As long as the stream's assimilative capacity is not exceeded or lowered, it is capable of maintaining a level of quality adequate to protect other insteam uses.

All stream segments located within South Carolina are classified according to the State Water Classification Standards System as of a certain date. The list of classified streams established under the Water Classification Standard System and Stream Classifications are promulgated as State regulations under the Administrative Procedures Act, S.C.C.A. § 1-23-10:

Class AA: Freshwaters having outstanding recreational or ecological significance suitable for drinking with treatment.

Class A - Trout: Freshwaters suitable for supporting reproducing trout populations.

Class A: Freshwater suitable to primary contact recreation, such as swimming and bathing.

Class B: Freshwaters suitable for secondary contact, such as recreation, fishing, industrial and agricultural uses, and drinking after treatment.

Class B - Trout: Freshwaters suitable for fish propagation.

Class SAA: Tidal saltwaters with outstanding recreational or ecological resource values.

Class SA: Tidal saltwaters suitable for harvesting shellfish.

Class SB: Tidal saltwaters suitable for primary contact recreation.

Class SC: Tidal saltwaters suitable for secondary contact, such as recreation, crabbing, and fishing.

Class GA: Irreplaceable groundwaters where no alternative drinking supplies exist or the water is ecologically vital or if pollutants would destroy unique habitats.

Class GB: Groundwater not considered a potential source of drinking water or that which is presently contaminated beyond all feasible clean up methods.

Water quality standards are designed so that the above classifications will not be violated for a particular watercourse at 7Q10 flow. The designation of uses and the setting of water quality criteria are interrelated. Specifying waterways for fishing, swimming, or public water supply is closely tied to the States' zoning power. To meet these uses, the State requires maintenance of water quality in streams tributary to waters of a higher classification (S.C.C.A. Reg. 61-68(c)). Compliance with this antidegradation clause requires a certain amount of water to be present in such tributaries to prevent the quality of the water from deteriorating. Furthermore, absolutely no wastewater discharge or dumping is allowed in high-quality waters (Class AA, SAA, or GA). The State Pollution Control Act makes it unlawful to damage or destroy fish, shellfish, aquatic animals, or indigenous plant life of a stream. Should the discharge of pollutants result in any of the above, criminal penalties of $500 to $25,000 or 2 years' imprisonment may result for each day's violation (S.C.C.A. § 48-1-90, 320).

Also, treatment works, utilizing grant funds, constructed before 1995 must analyze potential recreational and open-space opportunities and conform with the State continuing planning process under § 303 of the CWA [C.W.A. § 204(a) (2), 33 U.S.C. § 1284(a)(2)]. Further construction and operation permits are necessary for public water supplies developed from both surface and groundwaters (DHEC Reg. 61-58.1).

Example

The issue of water quality in South Carolina was dealt with in United States v. 531.13 Acres of Land, More or Less, Situated in Oconee County, State of South Carolina [366 F.2d 915 (4th Cir. 1966)]. After a dam was built, an industrial polluter was ordered by the State DHEC to clean up its discharge relative to water quality reclassification of impounded water. Prior to the construction of the dam and impoundment of water behind the structure, the J.P. Stevens Company was free to dump its refuse into an adjacent creek that was tributary to a major river. Stevens claimed that the dam and subsequent regulations destroyed its waste-disposal use of a nonnavigable source-tributary of a navigable river, and it was entitled to compensation for the loss. The court, in the petitioner's complaint found the claim untenable:

> No absolute right, we hold, was vested in Stevens under the law of South Carolina to discharge industrial wastes into Martin's Creek or the Seneca River. Utilization of the South Carolina streams is subject to the rights of other riparian owners, enforceable by the Pollution Authority . . . . The fundamental and determinative question in this control [by the Authority] either at the instance of another proprietor or of the State, is the reasonableness of the use (Id. at 918).

In addition to the power of the Pollution Authority to enforce reasonable uses of State streams relative to pollution control, the court found that the common law of South Carolina provided downstream owners with equivalent civil protection. Even without the creation of the lake behind the dam, Stevens would not have had immunity to continue the discharges if a lower owner on the Seneca had adapted his riparian reasonable uses for incompatible purposes, such as recreational uses.

Evaluation

The key to relating waste assimilation to instream flow rates lies on the estimation of flow conditions on a stream. Streams with low estimated flow rates have low assimilative capacities, thereby reducing the number of dischargers who can use the waterway. If the 7Q10 base flow is overestimated, an artifically high amount of waste discharge is authorized, resulting in possible overdevelopment of the river corridor and possible violations of water quality standards.

Water quality goals supporting fish and aquatic populations, recreational, and drinking water uses cannot be completely maintained using the hypothetical, 7Q10 mathematical model. DHEC cannot impose penalties or require effluent to be discontinued when dischargers are technically complying with the State-issued 7Q10 model permit. A need exists for minimum instream flows to be more accurately quantified in order to support stream classifications when stream flow reaches the 7Q10 level or less.

WETLAND DREDGING, FILLING, OR STREAM ALTERATIONS

Opportunity

All persons or public agencies proposing to locate a structure, excavate, fill, or discharge dredged or fill materials into wetlands or U.S. waters must first obtain a permit. Permitting authority allows South Carolina's officials to consider a wide range of ecological values, including long-term preservation of instream flows.

Background

South Carolina has a great diversity and abundance of wetlands. The State's approximately 4.5 million acres of wetlands constitute about 23% of its total surface area. In the upper half of the State wetlands are least abundant and consist largely of narrow river and stream floodplains. Wetlands increase in abundance from west to east in the Coastal Plain where wetland types include bottomland hardwood forests, broad floodplain swamps, freshwater marsh, brackish and saltwater marsh, and isolated wetlands such as Carolina Bays and pocosins.

In the past, South Carolina's wetlands have been considered undesirable area, and much effort was directed toward converting these areas to non-wetlands. Many areas were ditched and diked for rice cultivation. More recently, the values of wetlands--including flooding and drought moderation, water quality improvement, fish and wildlife habitat, primary production, erosion and sediment control, recreation, aesthetics, education, and scientific research--have been recognized, and there is much current interest in wetlands protection. At least two proposed freshwater wetland protection statutes have been developed and submitted to the South Carolina Legislature during 1987 and 1988. No action has yet been taken on these proposals.

The public's interest in the navigable waters of South Carolina is protected under Article 4, Section 4 of the South Carolina Constitution and Section 49-1-10 of the 1976 South Carolina Code of Laws. Navigable waters are those that can be navigated by rafts of lumber or timber or by small pleasure boats. There are about 5,000 miles of navigable waters in South Carolina, according to State criteria. Wetlands and navigable waters protection programs in South Carolina include the following:

a. Under the authority of Section 10 of the Rivers and Harbors Act of 1899 [33 U.S.C. § 403], the Charleston District of the U.S. Army Corps of Engineers regulates, through a permitting program, all construction and other alteration activities within navigable waters of the U.S. This program has a broad scope and includes the larger waterways of the State, but the only wetlands included are those that occur below the mean high water elevation of tidal areas. Most of the State's wetlands occur outside Section 10 permitting jurisdiction.

b. Section 404 of the Clean Water Act of 1977 [33 U.S.C. § 1344] authorizes the Corps of Engineers (Charleston District) to regulate the discharge of dredged or fill material in the waters and wetlands of the U.S. The area of jurisdiction for this program includes freshwater, brackish, and saltwater streams, lakes, and wetlands throughout South Carolina. Both isolated wetlands, such as bays and pocosins, and wetlands contiguous with streams, rivers, and lakes are included in the Section 404 permitting program.

A permit is required under Section 404 if there are point sources of pollution contributing discharges of dredged or fill material. A permit is required if the action is not exempt as normal farming or silviculture practice where the user impairs the flow or circulation of waters or reduce that reach of water (including accelerated drainage and flow alteration) [33 C.F.R. § 323.2(a)]. [See also Avoyelles Sportsmen's League v. Alexander, 473 F. Supp. 525 (W.D.La. 1979), affirmed by 715 F.2d 897 (5th Cir. 1983).] Under these circumstances, the Corps evaluates permit applicants in its "public interest review" process (P.L. 92-500 § 404(c). Among the criteria used are some that directly affect instream flow--including whether "the discharge of such materials onto such area will have an unacceptable adverse effect on municipal water supplies, shellfish beds, and fishing areas (including spawning and breeding areas), wildlife and recreational area" (P.L. 92-500 § 404(c)).

While the area of jurisdiction for the Section 404 program is large, only filling activities are regulated. Other wetland and waterway alteration activities, such as excavation, dredging, placement of structures, and hydrologic alteration (draining and flooding), are not included in Section 404.

c. A number of exemptions under these acts and other permits issued by the Corps, eliminate many types of activities in waterways and wetlands from direct regulation under the Section 10 and Section 404 permitting programs. For example, exempt activities requiring no Section 404 permit are normal farming activities, silviculture, plowing, seeding, cultivating, minor drainage, harvesting, and construction of farm or stock ponds.

d. Prior to issuance of a Section 404 permit, the applicant must obtain a Section 401 Water Quality Certification (P.L. 92-550; 33 U.S.C. § 1341). Section 401 of the Clean Water Act authorizes the U.S. Environmental Protection Agency to review proposed activities in waterways and wetlands regulated by other Federal permitting programs for compliance with water quality standards. In South Carolina, the U.S. EPA has delegated the Section 401 certification program to the DHEC. The DHEC reviews Federal permit applications and determines whether the activity would be in compliance with the State's Water Quality Standards regulations. Applicants may be required to conduct studies enabling the DHEC to determine that its quality standards will not be violated if hydrologic or environmental data is not sufficient (S.C.C.A. § 48-1-100). Denial of the Section 401 Water Quality Certification by the DHEC generally results in denial of the Federal permit. Limitations of the Section 401 program are that it is restricted to water quality considerations, and if no Federal permit is required for a specific activity, no Section 401 certification is required.

e. The South Carolina Coastal Zone Management Act of 1977 (S.C.C.A. § 48-39-10 et seq.) authorizes the South Carolina Coastal Council to require a permit for alteration activities within the Critical Area of the coast. This program includes many types of activities that impact waters and wetlands, but is limited to saltwater waterways and wetlands. The Coastal Council also is authorized to review all other Federal, State, and local permit applications for proposed activities in waters and wetlands throughout the eight coastal counties in South Carolina and determine if such activities are consistent with the provisions of the State Coastal Zone Management Program. Denial of a required consistency certification by the Coastal Council results in denial of the Federal, State, or local permit. Limitations of the consistency review are that it is restricted to coastal county waters and wetlands and operates only if there is a requirement for other permits.

f. The South Carolina Budget and Control Board and South Carolina Water Resources Commission are authorized by S.C.C.A. Reg. 19-450 to regulate dredging, filling, construction, flow alteration, and other alteration activities in navigable waters of the State.

State concurrence with Federal licensing authorities extends to the Section 404 programs of the CWA. Dischargers are required to prove to the State that the modification "along, or in combination with pollution for other sources" will not interfere with marine waters and resources [Water Quality Act § 303(a), CWA 301(h)(2), 101 Stat. 33 (1987) to be codified at 33 U.S.C. § 1311(h)(2)]. Permits are approved or denied based on the extent that the activity would harmfully obstruct the natural flow of navigable water and the project's affect on marine life or other natural resources, including water supply and endangered species (S.C.C.A. 48-29-150). The Corps will defer to State permit authority, unless there are "overriding factors of national interest." This program includes about 5,000 miles of navigable rivers and streams throughout the State, excluding the Critical Area of the coast. The scope of review of this interagency program is broad and includes a total assessment of proposed activities. The program is generally limited to activities occurring below the mean high water elevation in tidal areas and below the ordinary high water elevation in nontidal areas. Consequently, while navigable waters are regulated, most wetlands are not.

Example

Controlling and resticting the filling of wetlands is clearly within the scope of the State's power in response to the detrimental effects uncontrolled use of wetlands would have on the public welfare [*Carter v. South Carolina Coastal Council*, 281 S.C. 210, 314 S.E.2d 327, 329 (1984)]. The Coastal Council, acting as a fiduciary of navigable waters, decided to deny an application for a permit to raise the elevation of 5.3 acres of marshland. Tidal wetlands are under SCCC control, even if on private lands, if they border tidal waters, are subject to some tidal action, and support aquatic growth. Although Carter's land would undeniably increase in value if filled, the court stated "[a]n owner of land has no absolute and unlimited right to change the essential natural character of his land so as to use it for a purpose for which it was unsuited in its natural state which injures the rights of others" [Id. at 329, quoting *Just v. Maronette County*, 201 N.W.2d 761, 768 (Wisc. 1972)].

Evaluation

The State of South Carolina and the Federal government have in place adequate regulatory mechanisms to control alteration activities in navigable waterways and saltwater wetlands. However, there is still a need to further protect the public's interest in the State's extensive freshwater wetlands. Several bills have been presented to the South Carolina Legislature, although none have yet been adopted.

INTERBASIN TRANSFERS

Opportuntity

Instream uses in the river basin of origin are protected from proposed and permitted interbasin or out-of-basin transfers of water. Interbasin transfer permits can be issued with conditions to protect instream uses.

Background

The reasonable use doctrine of riparian rights requires that water diverted from a watercourse be returned. No case law in South Carolina addresses the legality of interbasin transfer under the reasonable use doctrine. The South Carolina General Assembly passed Act No. 90 of 1985, Interbasin Transfer of Water, to provide statutory guidance for such transfers. Some water transfers were in existence in South Carolina, many previously authorized under special acts by the General Assembly. All existing interbasin transfers were "grandfathered" or registered under the act and allowed to continue. These interbasin transfers are registered with the WRC, for a period not to exceed a 40-year term, with a standard term of 20 years. Following this period, registered transfers must obtain an interbasin transfer permit from the WRC.

Prior to the transfer of 1 million gallons per day, or 5% of the 7Q10 flow, whichever volume is less, from one of the 15 designated river basins in South Carolina to another basin, a permit must be obtained from the WRC (S.C.C.A. § 49-21-10). In determining whether the proposed transfer may be permitted, the WRC is required to protect present uses and consider projected uses in the basin of origin generally, and the river of origin specifically, including offstream uses, instream uses, and assimilative needs [S.C.C.A. § 49-21-30(C)(1)]. Further, the WRC must consider whether the transfer will have any beneficial or detrimental impact on navigation, hydropower generation, fish and wildlife habitat, aesthetics, or recreation [S.C.C.A. § 49-21-10(C)(12)].

Prior to the issuance of any interbasin transfer permit by the WRC, the DHEC must insure the protection of the water quality and health of the basin of origin, as well as the present and permitted assimilative needs of the basin of origin. Further, the DHEC shall use data from stream modeling and instream sampling in making its certification, and may also include conditions on the certification that would become part of any interbasin transfer permit issued by the WRC [S.C.C.A. § 49-21-30(D)].

To protect instream uses in the basin of origin, the WRC, in determining the volume of water that may be permitted, may conduct instream sampling and stream modeling [S.C.C.A. § 49-21-30(E)]. As of 1988, the WRC has and continues to develop hydrologic techniques to determine water availability in unregulated rivers, especially during critical low-flow periods. The WRC has also completed work on a multiple-reservoir monthly operational model on one of the three major regulated river systems in the State. The model is used to determine the effect of interbasin transfers on water availability in the basin of origin needed to protect both offstream and instream uses.

These modeling efforts are important when used in conjunction with the Interbasin Transfer Act, since any interbasin transfer permit issued requires the transfer of water be decreased or cease at some specified minimum streamflow to protect against adverse effects in the basin of origin [S.C.C.A. § 49-21-30(F)]. Also, no transfer of water may be permitted that causes the remaining flow in the river of origin to be less than the 7Q10 low-flow established prior to the transfer [S.C.C.A. § 49-21-30(F)]. Taken together, these sections of the act enable the WRC to establish an instantaneous minimum, as set forth in S.C.C.A. Reg. 121-12.1 et seq., to protect all water uses in the basin of origin, including instream uses. These conditions are effective for the life of the permit, which ranges from 1 to 40 years, the standard term being 20-years.

Any riparian owner or person legally exercising rights to use water who suffers material injury or the loss of water rights as a consequence of an interbasin transfer can bring a cause of action against the transferrer in the Court of Common Pleas [S.C.C.A. § 49-21-30(G)]. Also, following an opportunity for hearing, the WRC can modify, suspend, or revoke any permit, or registered transfer of water, for good cause [S.C.C.A. § 49-21-40(B)].

Evaluation

The Interbasin Transfer Act provides broad authority to the WRC to protect existing offstream and instream uses from proposed interbasin transfers of water. One evaluation has determined the act to be the most comprehensive statute of its type in the eastern United States (Kundell 1988). Specifically, the WRC is required to protect instream uses, including water quality, navigation, hydroelectric generation, fish and wildlife habitat, aesthetics and recreation, through the establishment of instantaneous flow requirements downstream of a permitted interbasin transfer. At no time can the transferrer, through the pumping, diversion, or transfer of water, cause the instantaneous flow to be less than the required minimum, which can never be less than the 7Q10 on an instantaneous basis.

SOUTH CAROLINA LAND USE LAWS

A number of South Carolina's statutes allow for comprehensive land use and water resource planning. The South Carolina Coastal Zone Management Act (S.C.C.A. § 48-39-10 et seq.) provides methods to control development in coastal and wetland areas whereby the natural flows in these areas can be maintained and restored. The South Carolina Scenic Rivers Act (S.C.C.A. § 51-5-10 et seq.) also enhances instream flows by incorporating comprehensive water and land use practices for three classes of scenic rivers. Furthermore, the use of conservation restrictions, easements, and other land acquisition techniques to acquire critical or unique lands, waters, or habitat are employed by various governmental agencies in South Carolina.

The South Carolina Coastal Zone Management Act

Opportunity. South Carolina recognizes the balance between desirable development and preservation of environmental values in coastal areas in the South Carolina Coastal Zone Management Act (S.C.C.A. § 48-39-10 et seq.). Preservation of streamflows can be secured through cooperation between regional and Federal coastal authorities and development interests.

Background. In § 48-39-20(B) of the South Carolina Coastal Zone Management Act (SCCZMA), the legislature found:

> The increasing and competing demands upon the lands and waters of our coastal zone occasioned by population growth and economic development, including requirements for industry, commerce, residential development, recreation, extraction of mineral resources and fossil fuels, transportation and navigation, waste disposal and harvesting of fish, shellfish, and other living marine resources have resulted in the decline or loss of living marine resources, wildlife, nutrient-rich areas, permanent and adverse changes to ecological systems, decreasing open space for public use and shoreline erosion.

With its passage, the State Legislature hoped to control coastal land use and develop a management program (S.C.C.A. § 48-39-20(C)). The South Carolina Coastal Council, created in 1977, works within a "critical area" concept. Critical areas include lands that are highly productive, commercially and recreationally. Critical areas include coastal waters, tidelands, beaches, and primary oceanfront sand dunes (S.C.C.A. § 49-30-10). Critical areas must provide the combination of uses that will insure the maximum benefit to the people of the State. This does not necessarily require a combination of uses that would generate the most economic benefit (S.C.C.A. § 49-39-30). The

SCCZMA allows some economic development to be excluded by promoting uses in the public interest, such as instream flows.

The Coastal Council jurisdiction extends over 500,000 acres of extremely sensitive and productive tidally influenced wetlands. Tidal areas support a great variety of marine life during all or part of their life cycles: shrimp, oysters, crabs, clams, and several fish species (S.C.C.A. Regs. 30-1A). Some freshwater wetlands, marshlands, and lands periodically inundated by saltwater are considered integral parts of the estuarine system and are also included in critical area management (S.C.C.A. § 48-39-10).

The SCCZMA mandates a plan that inventories significant natural, environmental, and recreational areas, areas for aquaculture, mariculture, bird management, and habitat protection. After coordination with local zoning bodies, the Coastal Council reviews proposed activities for Federal licenses and permits (S.C.C.A. § 48-39-80). The council must determine the present and potential uses and conflicts in uses for each coastal resource. It then establishes broad guidelines prioritizing these uses in critical areas.

Using management plan guidelines, the SCCC has the authority to review and comment on the discharge of treated effluent, dredge and fill activities, and the siting of utilities that would affect critical areas (S.C.C.A. § 48-39-130). Federal licensing, permitting, and development must be consistent with the SCCC's recommendations and programs. The council may base approval or denial of permits on the extent to which the activity would harmfully obstruct the natural flow of navigable water. A certificate declaring that the project would not interfere with commercial navigation or shipping must first be obtained from the South Carolina State Ports Authority (S.C.C.A. § 48-39-150). Other considerations include the affects on marine life and their water requirements, public access to navigable waters, habitats for endangered species, preservation of an area in its unaltered state, and the extent of adverse environmental impact that cannot be avoided by mitigation measures (S.C.C.A. § 48-39-150).

While public ownership of tidelands and submerged lands appears to be a settled common law doctrine, coastal landowners hotly contest the State's claim to lands lying between the mean high-water and low-water lines. Extensive coastal areas were cultivated for growing rice throughout the 18th and 19th centuries. Though rice cultivation has since ceased, the old rice impoundments are still valuable waterfowl habitat. Many landowners want to maintain or repair these impoundments as private hunting and fishing areas. Litigation is being initiated to establish whether the use of the tidelands is exclusive or public.

Example. Salinity balances in estuarine water are adversely affected by decreased instream flows resulting from transbasin diversions. About 1/5 (56,701 acres) of all shellfish growing areas are closed due to pollution in the Charleston and Beaufort areas. Studies suggest that rediversion of freshwater flows has adversely affected the salinity regimes, and results in wastes being poorly assimilated in the inner harbor areas rather than the open seas (Second National Water Assessment, p. 3-119, 120, April 1978.) The SCCZMA has not been used to require freshwater flows in these critical areas.

Evaluation. Tidelands compose about 500,000 acres of the State. As such, they have great significance for fish and wildlife resources and provide important recreational and economic opportunities. The use of instream flows to address estuary and coastal area degradation will enhance water quality and maintain the biological integrity of these waters. The use of SCCZMA considerations to permit or deny regulated activities in critical coastal areas has served to maintain the streamflows on which their delicate ecology depends.

Scenic Rivers

Opportunity. The incorporation of free-flowing rivers, without impoundment or diversion, into the South Carolina Scenic Rivers System will help to protect instream flow values. Inclusion of rivers within the system allows for the preservation of scenic, recreational, fishery, and other instream flow values.

Background. South Carolina, with assistance from the National Park Service, was the first State in the southeastern United States to inventory its scenic rivers. Under the South Carolina Scenic Rivers Statute (S.C.C.A. § 51-5-10 et seq.), recreational and scenic values could be enhanced and kept free from development pressures. As an independent, yet complementary, addition to the National Wild and Scenic Rivers System (16 U.S.C. § 1271 et seq.), the program is initiated by the WRC in its planning and acquisition stages, then turned over to the WMRD for administration. Formulation of a comprehensive water and land use plan is required for three classes of scenic rivers. Rivers eligible for inclusion in the system include:

> Class I: Natural River Areas are essentially free-flowing rivers without impoundment, diversion, straightening, or other modification, have no paralleling roads closer than 1 mile and limited crossings.
>
> Class II: Pastoral River Areas are those rivers running through pastoral or agricultural lands where dispersed human activities do not interfere with public use and enjoyment of the rivers and their shores.
>
> Class III: Partially developed river segments have scenic, recreational, or historical potential. This includes rivers with residences along its shores, rivers with parallel roads or some impoundments and rivers with water quality that could be upgraded (S.C.C.A. § 51-5-40).

Class I rivers must be managed to prevent construction of new roads or buildings and prohibit mining and timber harvesting. Wilderness attributes are enhanced by limiting camping and access. Class II and Class III rivers are managed to preserve both scenery and riparian landowner's rights by allowing dispersed human activities that do not interfere with passive use or enjoyment of the river. Mining and road construction are not allowed within scenic easements or public access areas. Management responsibility is given to the Wildlife and Marine Resources Department, with river segments administered in such a way as to protect and enhance the values for which they were included (S.C.C.A. § 51-5-140). Acquisition of riparian lands may be accomplished by acceptance of donations of land in fee or easement from private owners in return for an exemption from property tax assessment (S.C.C.A. § 51-5-70).

Example. The Chattooga River, of "Deliverance" fame, achieved National Wild and Scenic River status in 1974. This 40-mile stretch serves as the border between Georgia and South Carolina and has been identified as the best whitewater canoeing river in the eastern United States. Adjacent to Sumter National Forest, this Wild and Scenic River is managed by the U.S. Forest Service.

Presently, South Carolina has only one designated scenic river under the South Carolina Scenic Rivers Act, a 5-mile stretch of the Middle Saluda River coming from the Blue Ridge Mountains. Other streams studied and declared eligible for inclusion include segments of the Ashley River, the Little Pee Dee River, the Whitewater River, the Thompson River, and the Congaree River. In addition, negotiations are underway to include a 10-mile segment of the Lower Saluda River, from Lake Murray to its confluence with the Broad River.

Evaluation. River segments cannot be protected by the State program until fee title or easements are purchased or donated that convey management rights to the Water Resources Commission. The South Carolina General Assembly has never appropriated funds for the purchase of riparian lands by the Scenic Rivers Program.

The Scenic Rivers Act is of limited value in preserving instream water uses due to the cumbersome administrative nature of the legislation and budgetary constraints.

A positive step in South Carolina is the South Carolina Rivers Assessment being conducted in cooperation with the National Park Service. The rivers assessment is a study of 14 river resource categories ranging from economic to natural values. This study will assemble a comprehensive data base for South Carolina rivers and provide a better framework for decisionmaking for all river uses.

Land Acquisition

Opportunity. Acquisition of land and riparian water rights could be employed to protect instream uses of water in the public interest.

Background. Existing provisions for the acquisition of land include the following:

> Conservation restrictions and easements (S.C.C.A. 27-9-10) - Restrictions and easements of this nature are rights stated in any deed, will, or other land instrument appropriate to the retention of land or water areas predominantly in their natural, scenic, open, or wooded condition, or as suitable for fish and wildlife. Such restrictions or easements may be used to limit surface water uses that do not allow the land or water area involved to remain in predominantly its natural condition. Activities

detrimental to water conservation, fish and wildlife habitat preservation, and retention of land or water areas may also be limited. Conservation restrictions are interests in land and may be acquired by a governmental body that has power to acquire such interests, such as the DWMR (S.C.C.A. 27-9-20).

The State Parks, Recreation and Tourism Commission - This commission is responsible for the promotion of the general health and welfare of the people of the State by developing and expanding new and existing recreational areas. To this end, the commission is empowered to borrow money from available sources for the purpose of acquiring land. If land so acquired is adjacent to a natural watercourse, instream flows may be afforded a degree of protection by the exercise of riparian rights. The State Budget and Control Board may accept land by purchase or donation and turn it over to the commission for administration. For instance, the State may accept a perpetual easement or donation of land adjacent to designated scenic rivers and compensate the landowner by exempting the property from future tax assessments. It may not, however, exercise the power of eminent domain for the scenic river system (S.C.C.A. § 51-5-60, -70, -80).

Soil and Water Conservation Districts (S.C.C.A § 48-9-10 et seq.) - Under the Soil Conservation Act, the policy of the General Assembly is to provide for the conservation of soil and water resources of the State, assist in maintaining navigable rivers and harbors, preserve wildlife, and promote recreational development. In addition, the health, safety, and general welfare of the people of the State are to be protected and promoted. To achieve these goals, the State Land Resources Conservation Commission is empowered to coordinate the programs of soil and water conservation districts organized pursuant to the Soil Conservation Act, and may receive lands for the benefit of the districts.

Watershed Conservation Districts (S.C.C.A § 48-11-20, 110) - Watershed conservation districts may be established within one or more soil and water conservation districts for the purpose of developing programs relating to the control or conservation of soil and water resources. Constituting governmental subdivisions of the State, watershed conservation districts are empowered to acquire by purchase, exchange, lease, gift, grant, bequest, devise, or condemnation proceedings, selected lands, easements, or rights-of-way needed to carry out the purposes of the district. Condemnation approval is contingent on the land being absolutely essential to the purposes of the district.

The Wildlife and Marine Resources Department - The WMRD can acquire land or aquatic habitats necessary for management of nongame and endangered wildlife (S.C.C.A § 50-15-50). It may enter into agreements with Federal agencies, political subdivisions, or private persons to obtain necessary habitat. The primary goal of its Heritage Trust Program (S.C.C.A. § 51-17-10 et seq.) is to preserve the best examples of the State's natural history and maintain them in perpetuity. Outdoor sports, such as hunting and fishing, as well as aesthetics and habitat preservation, if consistent with the character of the area, can fall within the objectives envisioned by the program. Land protected under the program is designated as a Heritage Preserve upon recommendation of the Heritage Trust Advisory Board and approval by the Wildlife and Marine Resources Commission. Natural areas may be established through the process of dedication. Eighteen irreplaceable natural areas, encompassing 26,000 acres, are under the auspices of the Heritage Trust Program.

Recreation Land Trust Fund (S.C.C.A § 51-11-10, 20) - Administered by the State Parks, Recreation and Tourism Commission, a trust fund may be used for the purpose of acquiring recreational lands. No funds provided for under this provision may be expended to obtain property by eminent domain, and expenditures require the approval of the State Budget and Control Board.

Evaluation. Through the efforts of State, regional, or local bodies, lands or water rights may be acquired as necessary to preserve instream flows. Although streamflow maintenance has never been the primary goal, acquisitions for other purposes tangentially affect instream flows. Each land acquisition technique is limited by funding, but opportunities to protect instream flows can occur by prioritizing purchases of sensitive stream segments and through donations of land or easements.

FISHERY AND WILDLIFE PROTECTION AND MANAGEMENT

Opportunity

The existence of endangered or threatened aquatic species may prevent any activity that would disturb the species or its habitat, thus protecting streamflows within that habitat. Also, an assessment of stream fisheries may be used to define minimum streamflows needed for resident and anadromous fish populations.

Background

The Federal Endangered Species Act (16 U.S.C. § 1531-1542 (1982 and Supp. II 1984)) establishes lists of fish, animal, and plant species that are threatened with extinction. A similar degree of protection is accorded species listed pursuant to the South Carolina Nongame and Endangered Species Conservation Act (S.C.C.A § 50-15-10 et seq.).

Endangered or threatened species indigenous to South Carolina are protected in order to maintain, and possibly enhance, their numbers. Protection consists of prohibiting the taking, possession, transport, export, or sale of endangered species. All State-funded and Federally funded activities affecting habitat require consultation with the WMRD regarding the presence of endangered species, to mitigate adverse impacts on these species.

Endangered species are those whose prospects of survival within the State are jeopardized, or are likely to become so within the near future due to any of the following factors: (1) the destruction, drastic modification, or severe curtailment of its habitat, (2) the effects of disease, pollution, or predation, or (3) other natural or manmade factors. Management of endangered species includes research, census, and law enforcement (S.C.C.A. § 50-15-20). The WMRD uses whatever funds become available to acquire land or aquatic habitat necessary for management and improvement of nongame and endangered wildlife species (S.C.C.A § 51-11-50).

Several endangered or threatened species indigenous to coastal lands or waters have been placed on State and Federal lists. They include: the eastern brown pelican (*Pelecanus occidentalis*), wood stork (*Mycteria americana*), least tern (*Stern antillarum*), several species of whales and turtles, the American alligator (*Alligator mississippiensis*), pine barren tree frogs (*Hyla andersoni*), and the Webster's salamander (*Plethodon websteri*). Endangered fish that require minimum streamflows include the short-nosed sturgeon (*Acipenser brevirostrum*), the sandhills chub (*Semotilus lumbee*), and the Carolina darter (*Etheostoma collis collis*). Other endangered species found in riparian or estuarine habitats are the southern bald eagle (*Haliaeetus leucocephalus*), the Golden eagle (*Aquila chrysaetos*), and two mussels.

Dams can have a negative impact on nonendangered fishery resources. The establishment of freshwater fisheries may require minimum releases, regulated temperature levels, and assessments of the quantity and the timing of such releases to simulate natural conditions.

Historically, water releases from existing water projects have rarely been a legal requirement. Increasing awareness of the societal and economic values of fishery resources has initiated a change in this attitude, highlighted by Federal passage of the Electric Consumers Protection Act of 1986 (P.L. 99-495, 100 Stat. 1243), which mandated revisions in the Federal Power Act. These revisions require that "each license shall include conditions for . . . protection, mitigation, and enhancement [of fish and wildlife including related spawning grounds and habitat] subject to conditions based on recommendations received from . . . State Fish and Wildlife Agencies."

The State Legislature, realizing the importance of multidisciplinary streamflow management, requested the WRC to identify instream flow requirements for priority stream segments identified earlier by that agency as needing low-flow protection to maintain instream uses. Eight segments of the Saluda River have flows regulated to some extent by hydroelectric projects located in the Piedmont regions, four regulated reaches are in the Catawba-Wateree drainage, and three sites are unregulated Coastal Plain streams. Study methodology identified instream flow needs for water quality, navigation, hydropower, fishery resources, and unique ecological characteristics.

The South Carolina Wildlife and Marine Resources Department used information generated during the WRC study to formulate a general policy to protect fisheries in all State waters. The policy, now in draft form, is to oppose any water management activity that changes natural streamflow characteristics or any water withdrawal activity that fails to consider impacts on fishery resources.

Example

Certain hydroelectric facilities now operate without considering the status of downstream fisheries. Operating in response to peak-load demand, the entire daily release of water occurs within a few hours, and fish are left without any appreciable flows during the rest of the day.

Minimum flow requirements imposed to support these tailwater fisheries are the exception, not the rule, in South Carolina. In order to determine needed release schedules, the WMRD is collecting objective data on striped bass populations living in the Saluda River below Lake Murray.

Although a long-term operating permit has recently been granted to operators of the Lake Murray hydroelectric facility, fish and wildlife biologists believe that more stringent flow requirements are needed. Evidence suggests that sport fisheries will be enhanced if periods of no or limited water releases are eliminated.

Evaluation

The South Carolina Endangered Species Act can be a potent vehicle for maintaining instream flows to enhance the habitats of threatened or endangered species. The primary avenue of protecting threatened and endangered species begins with the listing process. Although the law provides a framework to acquire the critical habitat of these species, the WMRD's programs are subject to budgetary constraints. However, activities that alter streamflows may be delayed, modified, or even abandoned while alternative actions are examined.

The WMRD views its role in the State and Federal licensing of hydropower facilities to be the most effective tool to preserve instream flows. Although an advisory body with no regulatory powers in this area, WMRD comments are based on sound technical and scientific data collected by the utilities themselves. Instream flow recommendations are better received and more likely to be implemented when licensing new or proposed facilities. Based on data collected, the WMRD could petition FERC to reopen licenses of existing facilities if the need to protect fish populations and their attendant instream flows were imperative.

EROSION AND DRAINAGE CONTROL

Opportunity

Instream flows may be enhanced by practicing erosion and drainage control methods, because water more readily retained in the soil eliminates flooding, augments aquifers, improves navigation, and maintains riparian habitat.

Background

Uncontrolled soil erosion leads to increased silting and sedimentation of streams and rivers. The loss of water within stream channels destroys fish and wildlife habitat, diminishes underground water supplies resulting in intensified droughts, increases flooding by speeding the volume of rainfall runoff, and leads to navigational losses.

Enactment of the Soil and Water Conservation Districts Law (S.C.C.A. § 48-9-20) furthers the conservation, development, and disposal of water to preserve natural resources, control floods, prevent impairment of dams, maintain navigation, preserve wildlife, promote recreation, provide water storage, and promote the health, safety, and general welfare of the people of the State.

Local soil and water conservation districts nominate people to serve on the 5-member Land Resources Conservation Commission. The powers of the commission include coordinating local soil and water conservation programs and development of flood plain management strategies, exclusive of tidelands and marshlands.

The act details the creation of soil and water conservation districts and vests local districts with authority to ascertain and implement preventative erosion and water disposal controls. Drainage districts construct and operate structures necessary to carry out these duties (S.C.C.A § 48-9-1970). They may also promulgate, through the referendum process, local land-use regulations.

Watershed conservation districts, as political subdivisions of the State, may be established within soil and water conservation districts (S.C.C.A § 48-11-10 et seq.). Their primary purpose is to construct and maintain water improvement facilities. They also have power to borrow money and levy taxes on lands benefitted from services rendered and improvements made (S.C.C.A § 48-11-110).

In 1911 and 1920, South Carolina lawmakers declared "that the drainage of swamps, the drainage of surface water from agricultural lands and the reclamation of tidal marshes shall be considered a public benefit and conducive to the public health, convenience, utility, and welfare" (S.C.C.A § 49-17-10). This statement, and four other chapters contained in Title 49 of the Code of Laws of South Carolina, address drainage of surface waters. Many of the statutory passages duplicate each other and more modern pronouncements contained in the Soil and Water Conservation Districts Law.

South Carolina follows the common law rule that diffused surface waters are a "common enemy" of the people of the State, and landowners may deal with the enemy as they see fit. Surface waters, in this context, are diffused waters produced by rain and snow, as distinguished from those waters contained in a natural watercourse. One of the exceptions to the common enemy rule in South Carolina is that the right to deal with surface water is subject to the general law regarding nuisances. Although finding a nuisance is a question of fact for a jury to consider, the court found the ponding of water on another's property by blocking a watercourse to be an actionable nuisance [Suddeth v. Knight, 280 S.C. 540, 314 S.E.2d 11 (S.C. App. 1984)]. Under the common enemy rule, landowners were entitled to place fill dirt on their property to protect against surface waters, even to the petitioner's detriment. Further, no nuisance per se was created by their actions. The rule allowing a landowner to make reasonable use of his land with liability attaching for harmful interference with the flow of surface waters does not necessarily supplant the common enemy rule. The landowner, whose suit against his neighbor for surface water damage was dismissed under the common enemy rule, could not prevail even if the reasonable use standard was adopted [Williams v. Skipper, 284 S.C. 261, 325 S.E.2nd (S.C. App. 1985)].

Evaluation

Acquisition of land and restoration of watersheds can reduce erosion, increase retention, and increase streamflows during low-flow and drought periods. The statutory mechanisms appear to provide sufficient authority to implement instream flow goals. The first step of defining instream objectives has yet to be addressed at the local and regional level. Pinpointing the need will still be limited by the budgets of drainage and soil districts and their reclamation programs.

INTERSTATE COMPACTS AND COOPERATION

Opportunity

South Carolina's participation in interstate agreements would provide opportunity to protect a variety of streamflow-related activities. Cooperative planning and regulatory authority in an interstate organization could lead to instream flow maintenance and enhancement without the necessity of resorting to interstate litigation.

Background

The Water Resources Commission has authority to negotiate interstate agreements, accords, or compacts with other States or the U.S. Government. Any activity that impacts the water resources of South Carolina through pollution, transfer, withdrawal, or diversion, even if it is initiated beyond South Carolina's borders, falls under the auspices of this statute (S.C.C.A § 49-21-80).

Example

An area ripe for interstate agreement encompasses the course of the Savannah River from Augusta to the Atlantic. As the border between South Carolina and Georgia, its waters are in great demand for power generation and public water supply.

The single largest water user in the State, the U.S. Department of Energy, requires 230 million gallons of water per day at its Savannah River electrical generating facility. Drought conditions have lowered reservoir levels. The Clark's Hill Reservoir has been drawn down to a point where it is only releasing the minimum amount necessary to maintain navigation and meet the generating requirements of the Savannah River Project.

Minimal dam releases affect anadromous fisheries, as well as municipal water users who have had to relocate their intake points. Both States require water for economic growth, but it is difficult, if not cost-prohibitive, to divert water from other basins or purchase water from the existing system. Instream flows are necessary to maintain navigation, drinking water supplies, and fish populations, as well as economic resources. A regional approach to water conservation and allocation seems imperative in the near future.

Evaluation

No compacts or interstate agreements have been entered into or formed that represent South Carolina's instream flow interests. However, current water-related problems cannot be solved within South Carolina alone. Extensive information-gathering, recognizing the water demands of many competing users, is underway and must be coordinated. The WRC has the authority to create a compact commission with strong regulatory and unified management powers.

REFERENCES

Anon. 1969. The riparian rights doctrine in South Carolina. 21 S.C.L.Rev. 757.

Ausness, R. 1977. Water use permits in a riparian State: problems and proposals. 66 Ky.L.J. 191.

Ausness, R. 1983. Water rights legislation in the East: a program for reform. 24 W.M.L. Rev. 547.

Ausness, R. 1986. Water rights, the public trust doctrine, and the protection of instream flows 1986. U.Ill.L. Rev. 407.

Carney, L., and C. Michael. 1987. Opportunities to protect instream flows and wetland uses of water in New Hampshire and Connecticut. U.S. Fish Wildl. Serv. Biol. Rep. 87(6). 96 pp.

Clineburg, W. 1971. The law pertaining to estuarine lands in South Carolina. 23 S.C.L.Rev. 1.

Davis, P. 1982. The riparian right of streamflow protection in the Eastern United States. 36 Ark.L.Rev. 47.

de Kozlowski, S. 1985. Instream flow study, phase I. South Carolina Water Resources Commission Report No. 149. 30 pp.

Dixon, W., and W. Cox. 1985. Minimum flow protection in riparian States. J. Water Resour. Plan., Vol. III, No. 2, April.

Freeman, R., and F. Robinson. 1985. Opportunities to protect instream flows in Vermont and Pennsylvania. U.S. Fish Wildl. Serv. Biol. Rep. 86(1). 86 pp.

Haynes, T., and J. Watson. 1984. Stream flow maintenance in Virginia. 18 U.of Rich.L.Rev. 485.

Hill, C. 1971. Limitation on diversions from the watershed: riparian roadblock to beneficial use. 23 S.C.L.Rev. 43.

Kundell, J.E. 1968. Interbasin water transfers in riparian States: a case study of Georgia. Water Resour. Bull., Vol. 24, No. 1, February.

Liebesman, L., and E. Laws. 1987. The Water Quality Act of 1987. 17 E.L.R. 10311.

Meyers, K. 1985. Agricultural law casebook and materials. p. 793-796.

Orth, D. 1987. Ecological considerations in the development and application of instream flow habitat models. 1 Regulated Rivers Research and Management 171.

Putt, L. 1981. An analysis and evaluation of water rights in Alabama in perspective with other States in the South Atlantic and Gulf Region. 12 Cumb.L.Rev. 47.

Randall, C. 1971. Water resources research project. 23 S.C.L.Rev. 25.

South Carolina Water Resources Commission. 1983. South Carolina State water assessment. S.C. Water Resources Commission Rep. No. 140. 367 pp.

Sweetman, D. 1985. Instream flows in South Carolina,. Prepared for the South Carolina Water Resources Commission. 30 pp.

Wald, E. 1971. Navigability--its meaning and application in South Carolina. 23 S.C.L.Rev. 28.

Wyche, B. 1978. The South Carolina Coastal Zone Management Act of 1977. 29 S.C.L.Rev. 666.

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This publication is one of a series of similar documents that provides a survey of State prerogatives and programs that may be used to protect the instream uses of water. Most of the opportunities for protecting instream flows are related to fish and wildlife habitat, although many other instream uses are considered, including hydroelectric power production, recreation, nagivation, downstream delivery, and waste load assimilation. These documents illustrate methods to protect instream uses within the context of existing laws and regulations.

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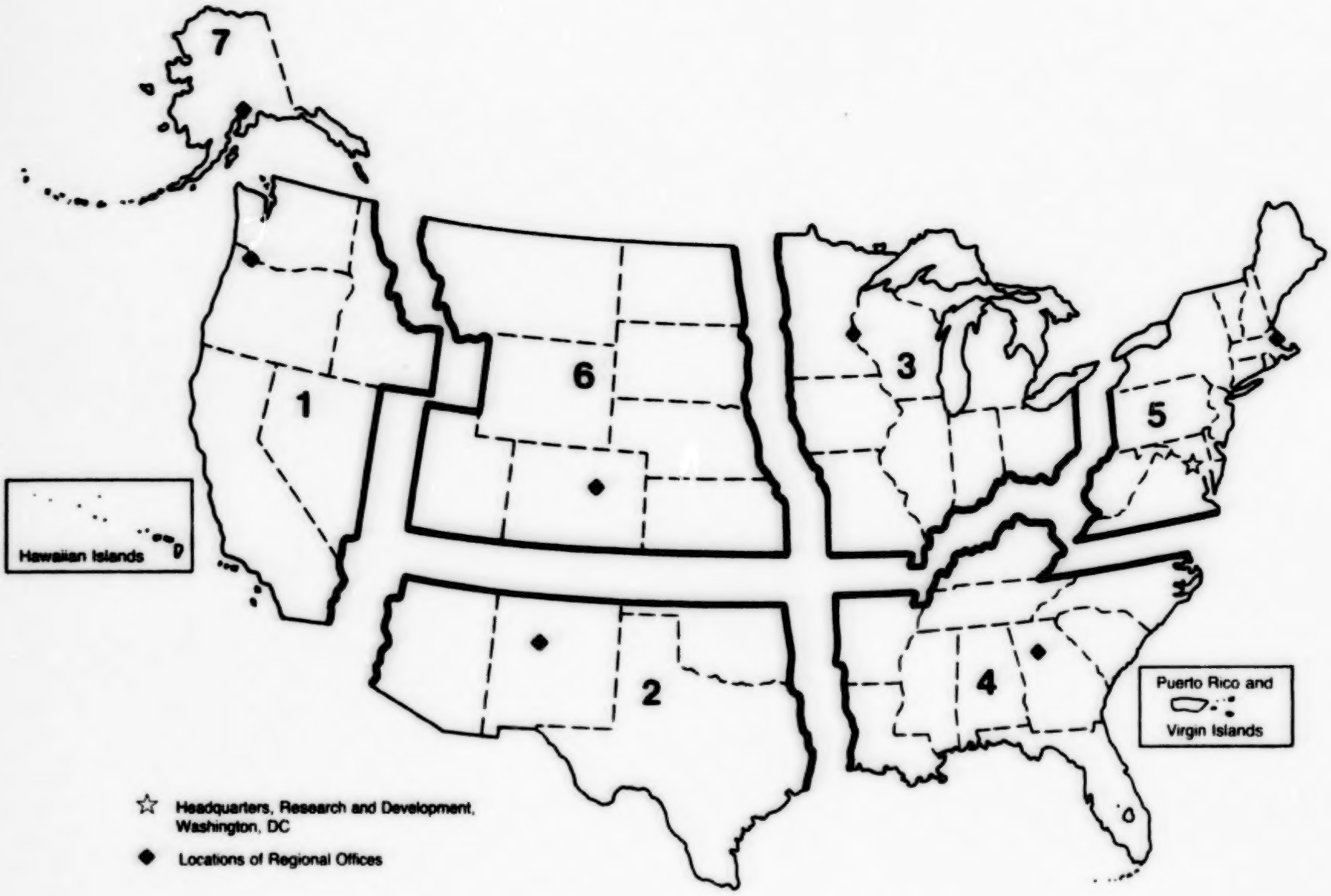
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